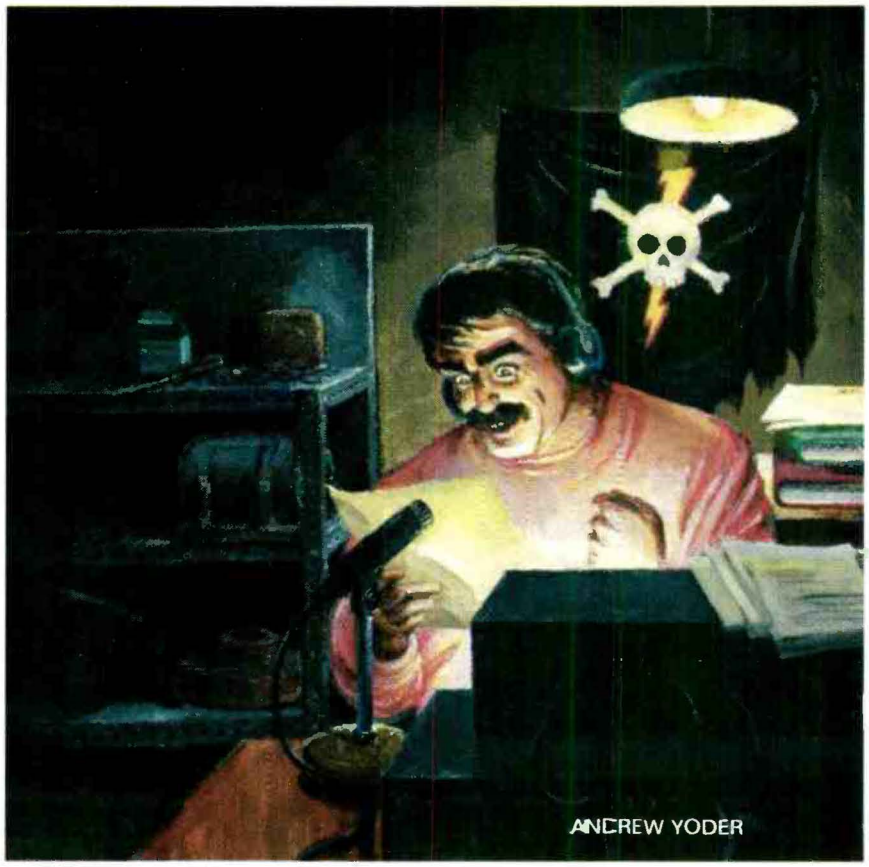
Pirate Radio

Shiver me timbers, here's a look inside the never boring world of clandestine broadcasting, more colorfully known as "Pirate Radio."



Radio tubes are glowing in the dim, electronics-equipment-strewn room. The aroma of incense laces the air. Steve Mann tunes around the shortwave frequency of 6955 kHz one last time to check for other stations using the channel. The radio emits only the light crackle of atmospheric noise. He leans over, flicks a switch on an aging amateur radio transmitter, and punches the play button on his cassette deck. Radio Eclipse is on the air.

As the opening "signature" (interval signal) is playing, shortwave listeners from Ontario to Texas begin tuning in. Others dial up the Internet to let friends know that Radio Eclipse is broadcasting a new program.

Meanwhile, back at the clandestine studio of Radio Eclipse, the strains of "Everybody Wants You" by Billy Squire die down. Steve Mann begins the much-anticipated "News of the Week" segment. As usual, Steve mixes factual news with shortwave culture and complete nonsense...producing often-hilarious results. In the past, Mann had aired everything from barbs at sportscaster Marv Albert to announcing a "list" of Andrew Cunanan's potential victims that the station "discovered." This week, however, Mann sticks with safer targets, namely those involved with the goings-on in Washington.

After a few more songs, fake ads, station-address announcements, and more of the interval signal, Mann turns off the tube finals and puts the transmitter in standby mode to cool off. Just after turning the receiver back on, the static is broken by the words "Good show, Steve." Mann flicks off the standby switch. So ends the broadcast day of Radio Eclipse.

As you might have guessed, Radio Eclipse is a pirate station—one of those almost-mythical phenomena that have been quietly making the headlines for the past decade, but that few people seem to have heard or really know anything about. Sure, many have seen articles about Stephen Dunifer of Free Radio Berkeley, who has tied the FCC up in court for several years or about Radio Newyork International or Radio Caroline (from England), both of which broadcast from large vessels in international waters. But how many have actually heard a pirate?

Stations have been pouring on to the airwaves over the past five years in the United States and Canada. By the FCC's estimates, 300 pirate stations were broadcasting from the U.S. going in to 1998, but these numbers are certainly conservative. Miami, Florida alone has boasted approximately 20 stations in 1998! A radio pirate in your hometown might even have escaped your attention. So, then, who are these pirates and what is the hoopla all about?

ABOUT THE AUTHOR

Andrew Yoder publishes *Hobby Broadcasting* magazine. He has also written the following books about pirate radio: Pirate Radio Stations, Pirate Radio, and Pirate Radio Operations. He can be contacted at: ayoder@cvn.net or P.O. Box 642, Mont Alto, PA 17237.

FM Pirates. Free Radio Berkeley

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has been in court with the FCC for several years over their right to broadcast. But the group has done much more than just create legal hassles for the FCC. FRB has also worked hard to spread pirate radio (called "microradio" or "microcasting" by those devoted to the cause) to the masses. Stephen Dunifer has sent out regular press releases, newsletters, and comments concerning Free Radio Berkeley in particular, and the unlicensed radio scene in general, to the FCC and major mass-media outlets across the country.

A business card from Steve Mann's Radio Eclipse pirate radio station.

The press releases and newsletters helped keep Free Radio Berkeley and other unlicensed broadcasters in the news in the San Francisco Bay area, and as a hot feature across the country. But Free Radio Berkeley did more than just inspire others to broadcast. They actually helped put other stations on the air by producing transmitter kits so that other like-minded people could have their own piece of the airwaves.

As a result, stations began popping up across the FM band around the United States, many using the FRB transmitters. The motivation was simple; most radio enthusiasts seem to believe that licensed radio has abandoned community and niche programming. Before long, companies such as Veronica, Broadcast Warehouse, and others were manufacturing higher-powered FM transmitters and marketing them in the United States. The competition lowered the transmitter prices, and even more stations began broadcasting.

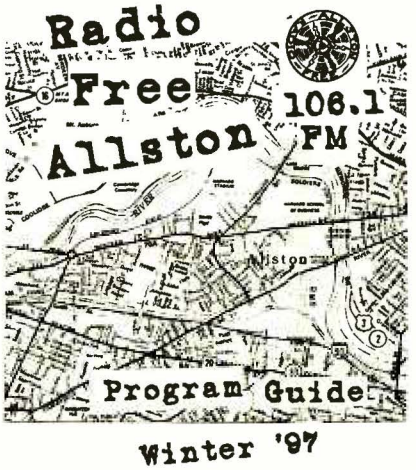
Now it seems that in any city of 100,000 or greater, at least a few FM pirates are broadcasting, either on a set schedule or irregularly. The larger cities have literally dozens of pirates, some of which are broadcasting on a 24-hour-per-day/7-days-a-week basis. For example, when the FCC swept into Miami, Florida in the summer of 1998, it raided 15 different FM pirates that were broadcasting on a regular basis. Within a month of the enforcement actions at least five new pirate broadcasters, all operating on regular schedules, could be heard.

The same story is being repeated across the country. Stations begin broadcasting, the FCC closes some of them down, and more operations come to life. As the FCC raids more stations, the pirates become more resourceful and more determined. It appears that some huge events are on the horizon for unlicensed FM broadcasting.

AM Pirates. For decades, AM pirate radio mostly occurred at the top end of the AM-broadcast band. The earliest well-known AM pirates began broadcasting there in the 1960s and 1970s. From that point on, the 1615- to 1635-kHz range was pirate territory. In the late 1970s and early 1980s, pirates such as WFAT, Pirate Radio New England, WART, WDX, WENJ, KPRC, KW Radio, Free Radio 1615, and many others would have hundreds of listeners, often receiving dozens of calls during every broadcast.

Much has changed, however, since the AM "expanded band" opened in the U.S. Long-distance U.S.-based radio pirates have largely disappeared because any such stations appearing within the band are for the most part crowded out by much more powerful signals from commercial stations at night. But AM pirating lives on in other countries. Dozens of stations from the Netherlands crowd the area from 1580 to 1630 kHz, and pirates from Greece and Yugoslavia often can be heard there as well. These days, if any North American pirate would like to broadcast on a clear nighttime channel, it would be necessary to move to 1710 or 1720 kHz. But will anyone be listening?

Shortwave Pirates. For decades, the shortwave frequencies have been a favorite pirate hangout. Those on the outside might wonder why anyone would waste their time broadcasting on frequencies that many can not receive. But upon further inspection, you can see that the shortwave bands and pirate radio seem almost made for each other.



Some pirate stations broadcast on a fixed schedule and even provided a program guide such as this one from a suburban Boston operation.

The greatest advantage of shortwave is its ratio of signal coverage to power. The typical 10-watt FM station will only cover anywhere from a few blocks to a few miles, depending on the height of the antenna and the obstacles in its path. However, with a decent antenna, 10 watts on shortwave

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can easily cover several hundred miles during the daytime or 1000 miles at night.

Obviously, if shortwave signals can cover such a huge territory, these stations are much more difficult to locate using direction-finding (DFing) equipment. The pirate could be anywhere! Also, shortwave signals can reflect off large buildings, hills and mountains, water towers, etc. and provide false signals for those who are attempting to locate the station.

The vast distances and many borders traversed by shortwave signals give those frequencies the final advantage. Who wouldn't feel compelled to tune in mysterious broadcasts from great distances? For example, in the 1970s and 1980s, Russian pirates, called "radio hooligans" by Soviet officials, often broadcast in the 2000- to 4000-kHz region. After the fall of communism in the Soviet Union, the Russian pirate Radio Without Borders International was heard all over Europe (and even in Canada) with its pro-Western pop music format.

Recent Enforcement Actions. Until relatively recently, pirate stations, both on shortwave and FM, have been broadcasting with reckless abandon, sometimes for several years. Many of those FM stations bluntly challenged the FCC's rules and their right to enforce them. These stations, particularly the ones that operated on a regular schedule, were staffed by volunteers from the community and often operated from a fixed location. For the most part, the shortwave stations were more careful and operated only a few hours per month, but still mostly from homes or other permanent locations.

But in November 1997, the FCC began to put the squeeze on much of the carefree broadcasting. The first action was an attack on a trio of FM stations (87X, Lutz Community Radio, and The Party Pirate) in the Tampa, Florida area. Those raids were notable because the FCC exercised considerable force to close down the community stations. Those who owned the stations were awakened in the early morning hours, with SWAT teams aiming automatic weapons at them. While the station owners were cuffed, face down on the floor, agents from numerous government agencies rifled through personal possessions, confiscating radio equipment, audio equipment, and music collections.

The enforcement activities continued throughout 1998. Outspoken opponents of the FCC, such as Radio Mutiny (Philadelphia), Free Radio Berkeley, and others were all closed down. The FCC claimed more than 200 raids against pirates in 1998.

But the stations haven't disappeared; if anything, they've become more resourceful. Radio Mutiny was perhaps the master of strategic publicity. After a publicity campaign, the station broadcast from the site of the Liberty Bell. They stated that if their voice of liberty was wrong, then the FCC was justified in raiding the station there, in front of our nation's symbol of liberty and the TV cameras. The FCC was apparently camera shy and the broadcast was a success. Armed with the promise of a media blitz, a female announcer broadcast from their studios completely naked that night, daring the FCC to close the station. Again, another success. When Radio Mutiny was eventually raided, the FCC waited until no one was around and the station was off the air.

At a low-power FM conference in Washington, DC in October 1998, attendees marched to the buildings of the FCC and the National Association of Broadcasters (NAB). As the parade reached the front of

A QSL card from 1970s pirate WFAT in New York City.

Some Active North American Shortwave Pirates

Blind Faith Radio	Testing and 1960s/1970s album rock.
Free Hope Experience	A weird mixture of UFOs, free speech, and comedy skits.
Mystery Radio	All-instrumental synthesized music—very mysterious!
Radio Azteca	Homebrew comedy all related to shortwave listening.
Radio Eclipse	A wide variety of music and elaborate parodies.
Radio Free Speech	Professional mix of novelty music, fake ads, and free speech editorials.
Radio Metallica Worldwide	Rock and metal music, plenty of R-rated discussions.
WACK	Rock music and telephone call-ins.
WEED	Collage-style mixes of rock and punk music, with snips of audio from speeches and movies.
WLIQ	Mostly rockabilly music.
WLIS	"We Love Interval Signals"—interval signals from stations around the world and some rock music.
WMPR	Techno music and brief IDs.
WSRR	"Solid Rock Radio" Rock, rap, and soul music, with some Christian sermons.

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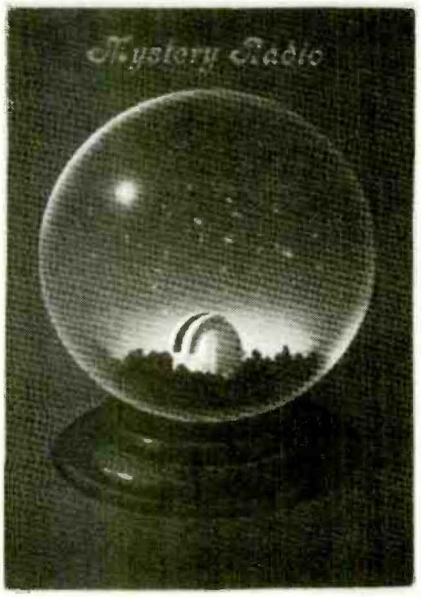
the FCC building, a 10-watt FM transmitter was turned on and Radio Mutiny began broadcasting, speaking out against FCC control of the airwaves. The FCC again took no action.

In late November, two radio activists in Berkeley, California broadcast for days, 50 feet up in a redwood tree as "Tree Radio Berkeley." According to several reports, the pair had received considerable media attention and vocal support



Mystery radio is one of a number of active (as of this writing) North American shortwave pirates. See the sidebar for others.

from people in the community. It was also reported that the FCC's first attempt to serve the pair a Notice of Apparent Liability failed because they couldn't find a way to get the papers up the tree!

On shortwave, activity in the United States has decreased significantly following raids on four different pirates around the country this past October. Unlike the direct-confrontation approach taken by many FM stations, the shortwave pirates have simply disappeared, apparently awaiting the time that "the coast is clear."

Tuning In To Pirate Radio Stations. If you live in a city or in the suburb of a major city, you have the opportunity to hear FM pirates. But they can be difficult to locate. In many large cities; the radio spectrum is nearly full. The best way to look for FM pirates is to get to know the broadcast spectrum and frequently tune the clear channels. Otherwise, it's a good idea to regularly read the alt.radio.pirate newsgroup on the Internet, check the local record shops and alternative weekly papers, and read *Hobby Broadcasting* magazine (see the "About the Author" box). Once you know that a station is active on a given frequency, then you can tune in whenever you have a chance and see if anything turns up.

Shortwave is very different. You don't need to really know a huge variety of frequencies. Instead, most pirates congregate around several well-known, clear frequencies. The current prime frequency area is plus or minus several kilohertz of 6955 kHz, just below the 40-meter amateur band. Also, one of the best-heard pirates of recent years is Radio Metallica Worldwide, which has been using 7415 kHz when a licensed station (WBCQ) that also uses that frequency is off the air. Most pirates broadcast during the weekend afternoons and evenings, although when activity was peaking in 1997 and 1998 (before the FCC raids), weekday-evening broadcasts were not uncommon.

The European pirates typically use the frequencies between 3900 and 3950 and also 6200 to 6300 kHz. The former range is used primarily at night and the latter is used during Sunday mornings. Often, more than one and sometimes two dozen stations broadcast every weekend, but these are very difficult to hear in North America because 3900-3950 kHz is part of the North American 80-meter ham band and signals in the 6200- to 6300-kHz range don't travel far in the daytime.

(Continued on page 44)

The History Of Unlicensed Radio

Without a doubt, pirate radio goes back to the earliest days of broadcasting. The first broadcasts ever were made by Reginald Fessenden on Christmas Eve 1906. Just like the pirate broadcasts that would appear nearly a century later, Fessenden's program appeared on a holiday without a schedule; was relatively short; featured variety show music, talk, and readings; and it surprised those who tuned in. Of course, Fessenden's broadcasts were also unlicensed. According to many accounts, these types of unlicensed, hobby broadcasts occurred through the teens, up through the early 1920s when the Federal Radio Commission (predecessor of the FCC) banned unlicensed broadcasting and broadcasting by amateur-radio operators.

It wasn't long until pirates began actively challenging the authority of the FRC. The first-known "true" pirate was WUMS ("We're Unknown Mysterious Station"), which operated irregularly from the banks of the Ohio River from 1924 until 1948. Station operator David Thomas even built a secret transmitter into a table and managed to foil the FCC in court in 1938 and 1948—even though he had been sentenced to four years in prison and an $8000 fine. The real end for WUMS came not from the FCC, but from the operator himself. Thomas died of cancer in 1983, soon after testing a new transmitter that would have put WUMS back on the air.

Other early mentions of pirate radio are difficult to find, but are recorded, nonetheless. For example, *Zenith Radio: The Early Years* by John Bryant and Harold Cones features a photo from when the Zenith flagship radio station decided to defy the FRC's ruling concerning their frequency in 1927. The station staff all donned pirate costumes for the broadcast! And a 1930s issue of *RADEX*, a radio-listening magazine, mentions one listener who received QSL cards from several different Ohio AM pirates.

Pirate radio slowed down for World War II, replaced instead by clandestine radio and espionage. The Cold War of the 1950s also was tough on the independent broadcasters. But as the commercial pirates (such as Radio Caroline, Radio London, Radio Mercur, Radio City, and others) began to take to the airwaves off the coast of Northern Europe in the late 1950s and early 1960s, pirate radio suddenly caught the interest of a new generation. In addition to inspiration from the Europeans, American enthusiasts were aided by then-inexpensive World War II surplus equipment, Lafayette phono oscillators, and such underground works as *The Anarchist Cookbook*.

By the 1970s, pirate radio was a fully established niche and some radio hobbyists even labeled themselves as "pirate radio listeners." The situation was especially well entrenched in Europe, where some shortwave pirates were receiving literally hundreds of letters for just a Sunday morning broadcast. Activity was not nearly as organized in North America during the 1970s, but still numerous stations were active during the decade.

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and the IC sockets, you are ready to insert the components and test your BreadBlox.

A 7800-series voltage regulator has leads that are slightly larger than the holes in the board. If you are using that type of regulator on the voltage-regulator module, the leads will have to be cut with a pair of diagonal cutters so that they will fit into the holes in the board. That will give the 7800-series regulator a better mechanical fit to the board. Invariably the regulator will be grabbed when removing the regulator module from the breadboard, so that component can use all the help it can get!

You'll find the BreadBlox are as handy to have in your experimenter's box as they are fun to use. After using them once or twice, you'll probably wonder how you ever got along without them.

The BreadBlox can also be of benefit to instructors in high school vocational programs, trade schools, and college labs. Not only can the BreadBlox be used to teach soldering skills to beginning students, they can then be used while the students begin learning simple circuits.

Note that we've just scratched the surface in this article. Every builder has favorite circuit subassemblies that he or she uses repeatedly. There is no reason that any of them can't be successfully implemented as a BreadBlox module. Please feel free to send any ideas that you might have for future modules to the author; the most popular ideas might be translated into a next-generation BreadBlox. Send your ideas to melton@startext.net. Ω

PIRATE RADIO

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However, because of the recent FCC raids, one European pirate, SWRS (Shortwave Relay Service) is currently heard in North America more than most of the stations from this continent. SWRS relays programs from many different pirates on 21,450, 11,470, and 7,490 kHz on most weekends. In the East, 21,450 kHz often fades in for a little while from 1200-1400 UTC. 11470 can be heard for longer amounts of time, but with a weaker signal, and 7490 is rarely heard.

The Future Of Pirate Radio. Whether you call it "pirate" radio, "microbroadcasting," or "LPFM," unlicensed broadcasting has existed since the earliest days of radio. For years, people have speculated that the diversity of the commercial stations would eliminate pirate broadcasting. Instead, licensed radio (both public and commercial) has become more homogenized. As more people are compelled to support the pirates, the FCC is stepping up its enforcement. Unless the FCC begins to implement unlicensed broadcasting bands, the pirate radio conflict will continue to make headlines across the country. Stay tuned. Ω

What Do I Need To Hear Pirates?

Hearing shortwave pirates does require some specialized listening equipment, but you don't need a wall of equipment that could give NASA a run for its money. Of course, the first requirement is a shortwave receiver. The receiver doesn't have to be the latest in Stealth technology, but it must be more sensitive than the "boom boxes" that include shortwave bands. Typically, any receiver that is capable of tuning in SSB (single side-band) signals will tune in at least half of the pirates broadcasting in North America.

SSB reception is important because most pirates from this continent broadcast in the USB mode. Some of the portables that do well for receiving pirates include the Sony 7600 and 2010, Grundig YB-400, Sangean ATS-909, and the Drake SW-8. Also, any tabletop model should do quite well for receiving pirates.

You don't need a massive log-periodic or rhombic antenna on a few acres to hear pirates, but an external antenna certainly will help. On tabletop receivers, the antenna should be at least 20 feet long (although a longer antenna or a dipole will help). Anywhere from 10 to 40 feet of wire stretched out, with one end stripped and wrapped around the whip antenna of portables, will considerably raise the signal levels. Be aware that long antennas could cause damage to portable receivers, such as the Sony 2010.

Finally, a cassette recorder is helpful so that you can record programs for posterity. A notebook will help you to log all of the stations that you hear.

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